

-continued

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21

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What is claimed:

1. A method of producing phytase in yeast comprising:
 - providing a heterologous polynucleotide from non-yeast organism which encodes a protein or polypeptide comprising either a PhyA phytase or an AppA phytase;
 - expressing the protein or polypeptide in a yeast; and
 - isolating the expressed protein or polypeptide, wherein said protein or polypeptide catalyzes the release of phosphate from phytate and has increased thermostability as compared to that of said protein or polypeptide expressed in a non-yeast host cell.
2. The method according to claim 1, wherein the heterologous polynucleotide is an isolated appA polynucleotide.
3. The method according to claim 1, wherein the yeast is selected from the group consisting of *Saccharomyces* species, *Pichia* species, *Kluyveromyces* species, *Hansenula* species, *Candida* species, *Torulaspora* species, and *Schizosaccharomyces* species.
4. The method according to claim 3, wherein the yeast is *Pichia*.
5. The method according to claim 1, wherein the protein or polypeptide has an optimal phytase activity at a pH of less than about 4.
6. The method according to claim 1, wherein the protein or polypeptide preceded by a signal peptide is secreted by the yeast into a growth medium or is not secreted.
7. The method according to claim 6, wherein the protein or polypeptide is secreted by the yeast into the growth medium and has a concentration greater than 300 units per milliliter of the growth medium.
8. The method according to claim 1, wherein the heterologous polynucleotide which encodes a protein or polypeptide with phytase activity is spliced in frame with a transcriptional enhancer element.
9. The method according to claim 1, wherein the heterologous polynucleotide is carried on a vector for stable transformation.
10. The method according to claim 1, wherein the heterologous polynucleotide is carried on an artificial chromosome.
11. The method according to claim 1, wherein the heterologous polynucleotide is integrated into a chromosome of the yeast.
12. A yeast strain comprising:
 - a heterologous polynucleotide from a non-yeast organism which encodes a protein or polypeptide comprising either a PhyA phytase or an AppA phytase and is functionally linked to a promoter, wherein said protein or polypeptide catalyzes the release of phosphate from phytate and has increased thermostability as compared to that of said protein or polypeptide expressed in a non-yeast host cell.
13. The yeast strain according to claim 12, wherein the heterologous polynucleotide is an isolated appA polynucleotide.
14. The yeast strain according to claim 12, wherein the yeast is selected from the group consisting of *Saccharomyces* species, *Pichia* species, *Kluyveromyces* species, *Hansenula* species, *Candida* species, *Torulaspora* species, and *Schizosaccharomyces* species.
15. The yeast strain according to claim 14, wherein the yeast is *Pichia*.
16. The yeast strain according to claim 12, wherein the heterologous polynucleotide which encodes a protein or polypeptide with phytase activity is spliced in frame with a transcriptional enhancer element.
17. The yeast strain according to claim 12, wherein the heterologous polynucleotide is carried on a vector for stable transformation.
18. The yeast strain according to claim 12, wherein the heterologous polynucleotide is carried on an artificial chromosome.
19. The yeast strain according to claim 12, wherein the heterologous polynucleotide is integrated into a chromosome of the yeast.
20. The yeast strain according to claim 12, wherein the protein or polypeptide is preceded by a signal peptide.
21. A vector comprising:
 - a polynucleotide from a non-yeast organism which encodes a protein or polypeptide comprising either a PhyA phytase or an AppA phytase, wherein said protein or polypeptide catalyzes the release of phosphate from phytate and has increased thermostability when expressed in a yeast host cell compared to a non-yeast host cell;
 - a promoter functionally linked to the polynucleotide encoding the protein or polypeptide; and